How do we turn waste to wealth?

#nordicsolutions to global challenges

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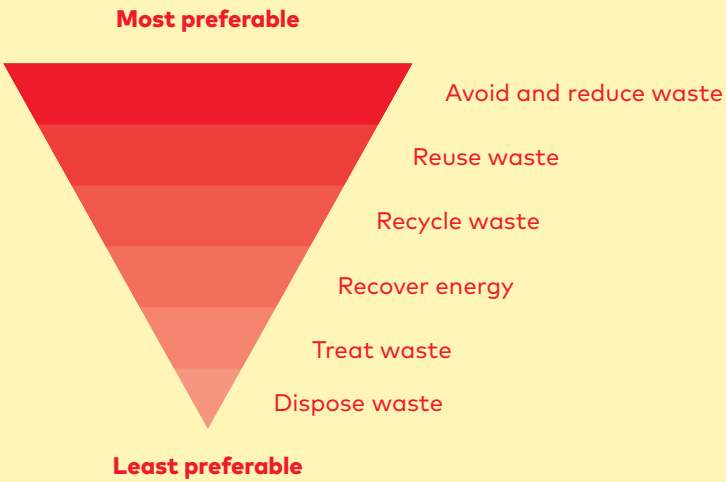
Waste management

The world generates 2.01 billion tonnes of municipal solid waste annually and that number is estimated to rise to 3.40 billion tonnes by 2050.Poor management of waste is not only causing the planet harm through the contamination of oceans, clogging drains and causing floods but it is also affecting daily health, productivity, and cleanliness of communities.

Nordic solutions

The Nordic countries are aiming for a zero waste society where waste is avoided. Yet currently the Nordic countries are working within different levels of the EU waste hierarchy shown below.

This booklet will showcase 3 different cases in Denmark, Sweden and Norway that cover waste-to-energy, auto recycling and biological waste management solutions.




GARBAGE ONLY
ORGANICS ONLY

Waste-To-Energy – Babcock & Wilcox Vølund

Intro + Challenge

Waste is not only an issue that affects health, neither does it only create serious problems for the environment; it is now a valuable resource that can provide raw materials for production, nutrients for agriculture, and a source of energy.

In Denmark, 1 million tons of organic household waste is incinerated every year. New innovative technology for waste collection, sorting and treatment can help to move efforts towards greater reuse, recycling or energy recovery and reduced landfilling.

Solution

Babcock & Wilcox Volund is one of the global leaders in supplying equipment and technologies designed to convert household waste and biomass into thermal energy. A waste-to-energy plant is an ecological and cost-effective way of energy recovery by converting municipal solid waste into electricity and/or heat. Energy is generated by burning waste at high temperatures to create steam which drives a wind turbine to create electricity.

Result

The energy produced from waste can help to stabilise both the price of electricity and the availability as waste-to-energy operations can run 24/7 providing electricity and heat to meet the demands of local communities. This will reduce CO2 emissions and reliance on fossil fuels.

Photo: Orf3us

Auto sorting – Tomra

Intro + Challenge

Globally, 91% of plastics produced is not recycled. 8 million tonnes end up in the oceans every year. An empty bottle of average size has an energy potential of about 1 kWh, while an empty can has about 0.46 kWh but if this is thrown into residual waste, the energy is lost.

In Norway, 42% of municipal solid waste is recycled and with the introduction of the deposit recycling scheme, Norway now recycles 97% of all its plastic bottles.

Solution

Tomra creates sorting sensor-based technology that allows for many different types of materials to be sorted and re-cycled. Around 46% of non-separated household waste is made up of organic materials. Tomra's technology can process municipal solid waste and extract plastic and metals through various screening steps. The result is pure and high-value organic waste ready for reuse.

Result

High labour cost and quality control issues are reduced due to the automation of recycling. Through the automation, sorting is optimised which allows authorities to meet environmental standards for sorting.


TOMRA

Biological Treatment – Spikes & Cogs

Intro + Challenge

The largest waste category is food and green waste, making up 44% of all global waste. This is a widespread issue that causes wastage of resources, such as water, labour and energy that is used in the production of food.

In Sweden, 949,000 tonnes of waste is produced and approximately 78kg of food waste is produced per person annually in Swedish households. In 2017, 741,280 tonnes of Sweden's household waste went to biological treatment – anaerobic digestion or composting.

Solution

Spikes & Cogs is a clean-tech company specialising in the management of organic biowastes and mixed industrial wastes for re-use. One process used turns biowaste into fertilisers by high-temperature composting from the organic feedstock, such as animal slurries/manure, vegetables, fruit and food scraps, by-products from agriculture and forestry and more. Similar processes are able to produce biofuels which can reduce the need for fossil fuels.

Result

Biowaste creates a closed circuit between town and country and reduces the need to import fertilisers. The composting of biowaste is odourless, dust-free, yields no drain and is a sanitation/pasteurisation from pathogens and contagions.

This booklet is made as part of the Nordic Sustainable Cities project, which is powered by Nordic Innovation to showcase and export Nordic solutions to urban sustainable development challenges.

Nordic Sustainable Cities is one of six flagship projects under the Nordic prime ministers' initiative Nordic Solutions to Global Challenges, which is coordinated by the Nordic Council of Ministers.

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